CONFÉRENCE INTERNATIONALE DES GRANDS RÉSEAUX ÉLECTRIQUES A HAUTE TENSION
INTERNATIONAL CONFERENCE ON LARGE HIGH VOLTAGE ELECTRIC SYSTEMS
STUDY COMMITTEE 35
POWER SYSTEM COMMUNICATIONS AND TELECONTROL

Study Committee 35 Annual Report

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STRATEGIC DIRECTION

SC35 mission is to facilitate and to promote the interchange of technical knowledge, information, and experience in the fields of Power System Communications and Telecontrol. In this scope of work, the Strategic Plan (1993-2002) defines the following eight technical areas of activity:

- T1: Transmission media.
- T2: Transmission techniques.
- T3: Switching and network techniques.
- T4: Operation and management of telecommunications networks.
- T5: Telecontrol systems.
- T6: Emerging telecommunications and telecontrol technologies.
- T7: Public telecommunications deregulation.
- T8: Telecommunication Statistics.

In addition, the Action Plan includes two administrative directions as follows:

- A1: Improve Study Committee Practices.
- A2: Widen Study Committee Influence.

Despite a large amount of work being completed this year, few publications were issued. Two papers have been published in ELECTRA, two papers have been prepared on behalf of SC35 for the 1996 Cigré Session, two internal reports (including Telecommunications Statistics), three recommendations and an updated release of « SC35 Practices and Guidelines » have been issued.

However, four Technical Brochures have been approved and are in the publication process pipeline.

As well as the technical activity, significant work was carried out in the administrative directions including, restructuring of a WG, development of relations with kindred organisations, and improvement in communications.

TECHNICAL ACTIVITIES

T1 TRANSMISSION MEDIA

Valuable work has been completed in the field of **« Fibre Optics »**, as more and more electric utilities are looking after benefits from telecommunications investments.

A survey was performed to establish how Utilities are expecting to apply optical fibre technology to new applications. A report, « New Applications for Optical Fibres in Power Utilities », was issued illustrating how Utilities are expecting to use this technology, both now and in the future to the year 2000 and beyond. An abstract is being prepared for publication in ELECTRA.

The Technical Brochure TB106, « New Opportunities for Optical Fibre Technology in Power Utilities », has been completed and approved by SC35. This guide sets out to establish principles for the construction of a telecommunications network, whether this be for the Utility own use or for any proposed business venture. As concerns business ventures, this guide covers considerations that need to be applied for working with a partner, or when taking a considered risk and developing a third party business which may well be in direct competition to an existing public telecommunications operator.

Two additional studies are under process for issuance of Technical Brochures. The first one is related to selection of optical fibre cables, « Optical Fibre Cable Solution for Electricity Utilities », and the second one to maintenance of optical fibre cables, « A Guide to Preventive and Corrective Maintenance for Aerial Optical Fibre Cables on Power Utility Overhead Lines ».

Investigations have been carried out to assess the extent of present and future use of **« Digital Power Line Carrier »** systems. SCTF35.02 (Convener, Dr. Al Jamea) issued recommendations to establish a study into Digital PLC. These recommendations have been approved by SC35 and a new Working Group (WG35.09) will carry out work to review and to assess Digital PLC technologies, to identify advantages and limitations of them, to draft outlines for general specifications and testing procedures, as well as drafting application guidelines.

T2 TRANSMISSION TECHNIQUES

The Action Plan calls for study of, **« High Speed Data »**, and the following work was carried out.

The Technical Brochure TB107, « Power System Telecommunication in the High Speed Environment », was finalised and approved by SC35. It provides some guidelines on how utility applications may be related to network technologies such as SDH, ATM and TMN.

Further studies are under process considering Telecontrol over ATM, and potential to use Internet Technology in the Power Supply industry (note: *"Internet Technology"* ***- not "The Internet Network")***

SC35 carried out work on **« Protection Signalling »** to contribute to the 1996 Cigré Session in Paris. This contribution was achieved by:

⇒ Discussion on Preferential Subject (combined with SC34) « Protection systems using advanced communications facilities ».
⇒ Discussion at Panel Session n° 1 about « Transmission of angle measurements for network control ».

Moreover investigations were carried out to assess the need to further study:

⇒ Digital Protection Communications by SCTF35.03 (Convener, Mr. S. Hughes).
As a result, a new Joint Working Group (JWG34/35.11) is to be formed with SC34.
⇒ Satellite Based Reference Systems (SBRS).
Recommendations were issued to study use of GPS technology in specific power system applications such as protection, fault location and phasor angle measurements. This work was carried out by SCTF35.04 (Convener, Mr. G. F. Bartak).

As concerns **« SCADA Data Transmission and Protocols »**, finalisation of Technical Brochure, « Communication concepts for Control Centres » is under way. This Technical Brochure will include data about utility data communication requirements and scenarios implemented by different countries. In addition, SC35 contributed during the 1996 Cigré Session in Paris to Panel Session n° 2, « Challenges for Power System planners and operators due to changing institutional arrangements ».

T3 SWITCHING AND NETWORK TECHNIQUES

There is no work currently in progress on this subject.

T4 OPERATION AND MANAGEMENT OF TELECOMMUNICATIONS NETWORKS

SC35 decided at Cigré 1996 Session, that a study is to be carried out on the second level of **« Telecommunications Network Management »** (control of SDH, etc.) and associated Telecommunication Management Systems. This will be addressed by Working Group WG08.

T5 TELECONTROL SYSTEMS

Status of work on **« Telecontrol in Power System Control Centres »**, is as follows.

The Technical Brochure TB46, « Database Management in Telecontrol Systems », was finalised and has been approved by SC35. It provides guidelines on Database, Database Networks and Open System Architecture Databases.

Ongoing studies for issuance of Technical Brochures are dealing with:

⇒ « Advanced Alarm handling in Control Centre », i.e., all possible techniques to detect the underlying cause for the large amount of data received in a Control Centre during emergency situations and to reduce stress on the operator (SCTF35.13.01, Convener, Mr. J. Hamley).

⇒ « Knowledge Based Systems in SCADA/EMS », i.e., guidelines about the stages that need to be completed from conception to operation of an intelligent application and the subsequent life time support necessary to maintain its operation (SCTF35.13.02, Convener, Mr. D. Cooper).

⇒ « Backup Control Centres and Emergency Dispatch », i.e., survey of actions typically being taken by utility in regard to backup Control Centre, database access and duplication and costs/benefits evaluation (SCTF35.13.04, Convener, Mr. A. Marais).

T7 PUBLIC TELECOMMUNICATIONS DEREGULATION

A very large amount of work output was achieved on **« Effects of Public Telecommunications Deregulation on Power Utilities** ».
To cope with the rapid development within the telecommunication deregulation area, the following publications were issued in 1996:

⇒ ELECTRA, April 1996, n° 165:
- « Status report regarding the issues of outsourcing telecommunications services from utilities »,
- « Influence of the telecommunication deregulation process within the power utilities ».

⇒ Cigré 1996 Session, papers:
- « The influence of deregulation of the telecommunications market upon the power utilities »,
- « Business opportunities for electric utilities in the telecommunications market ».

The Technical Brochure TB108, « Business opportunities for utilities in the telecommunications market », has been finalised and approved by SC35. It is in the publication process.

In addition two studies are underway for papers to be published in ELECTRA:

⇒ « International Connection of Utility Telecommunications Systems ».

⇒ « Preferred environmental conditions for utilities entering telecommunications market ».

T8 TELECOMMUNICATION STATISTICS

The work for collecting, compiling and drafting the statistics report has been carried out over regularly over a four year cycle as part of our action plan. 1996 marked the end of the cycle, thus, the booklet « SC35 Telecommunication Statistics » was issued in June. It provides a compilation of data from 17 countries about traditional data on telecommunication transmission systems, data on telecommunication regulations and data on switching systems.

ADMINISTRATIVE ACTIVITIES

A1 IMPROVE STUDY COMMITTEE PRACTICES

« Duty Statements for Officers », and **« Documented Rules and Practices »**, were updated in a release of « SC35 Practices and Guideline » issued in August, 1996.

SC35 established three **« Use of Ad-hoc Groups for Special Tasks »** to provide advice and to issue recommendations on:

⇒ The need to study Digital PLC (SCTF35.02).
⇒ The need for Cooperative Study with SC34 on Teleprotection (SCTF35.03).
⇒ The need to study Satellite Based Reference Systems (SCTF35.04).

The tasks having being completed, these three TFs have been dismantled.

To **« Improve Communications »**, and thus to increase SC35 efficiency, three « Newsletters » were issued in 1996 to inform SC Members about activities, and e-mail services are now used to provide primary communications on on-going works. Finally, a homepage on the Web was implemented providing SC35 details and the list of published papers including those from SC35 Colloquia. (http://ourwold.compuserve.com/homepages/grahamvincent).

To adapt SC35 structure to on-going activities and where necessary **« Restructure Working Groups** », the following decisions have been implemented:

⇒ WG35.01 and WG35.03 have been merged into a single Working Group WG35.13.
⇒ In WG.13 Task Forces have been defined with the full responsibility on identified packages of work.
⇒ In addition, a new Working Group WG35.09 to deal with Digital PLC and a Joint Working Group with SC34 (JWG34/35.11) are being established.

A2 WIDEN STUDY COMMITTEE INFLUENCE

In 1996, four Members or Observers Members were appointed to SC35 from National Committees not previously represented through, **« Soliciting support from non-represented National Committees »**.

As concerning, **« Relationship with kindred organisations »**, SC35 has been highly active:

⇒ Attendance to IEEE PSES/PSCC Winter meeting (January 1996).
⇒ Attendance to IEC meeting (September 1996).
⇒ UTC Executive Members are active on the SC35 and related WG.
⇒ SC35 Members are active on IEC TC57 WG.
⇒ WG35 Members are active on IEEE Fibre Optic Subcommittee.
⇒ Invitation to IEC TC57 Chairman to attend SC35 meetings.